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09/533,421	03/22/2000	Charles S. Roberson	CISCP794	8630

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EXAMINER	
MERED, HABTE	
ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/533,421	ROBERSON, CHARLES S	
	Examiner	Art Unit	
	Habte Mered	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-10 and 12-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-10 and 12-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20050211*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 3-10, and 12-21 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claims are 1, 6, 10, 15, 19, 20, and 21 objected to because of the following informalities: The use of the phrase "communication link between the plurality of cards" is incorrect. It is important to note that "communication link" is not a generic term according to the applicant's specification. It is defined on page 11 of the specification what is meant by a system communication link. According to the specification, system communication links exist between the centralized TCC and each of the plurality of cards and not between the cards as implied in the objected claims. The only other reference to a communication link is on page 17 of the specification and it clearly indicates it is a system communication link that is being observed. Further, none of the applicant's figures show a communication link between the cards. Specifically in Figure 3 element 150 is a point-to-point connection between the cross-connect and the interface card and element 352 is the system communication link between the interface cards and the TCC. If the use of the phrase, "communication link between cards" is actual links between the cards then it constitutes new teachings not covered in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims1, 3, 6-8, 10, 12, 15-17, 20, and 21 are** rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al (US 6, 370, 155), hereinafter referred to as Cantwell, in view of Read et al (US 5, 781, 527), hereinafter referred to as Read.

5. Regarding **claims 1, 10, 20, and 21**, Cantwell discloses a method and an apparatus for controlling the operation of a flexible cross-connect system which has a plurality of cards **(Figure 1, elements 28 and 30; Column 6, Lines 5-10)** including an active control unit, a redundant control unit **(Figure 1, elements 12 A & B; Column 3, Lines 37-40)**, a plurality of interface cards **(Figure 1, elements 28 and 30; Column 6, Lines 5-10)**, an active cross-connect unit, a redundant cross-connect unit **(Figure 1, elements 24 and 26; Column 4, Lines 1-10)**, and a backplane forming a plurality of data buses **(Column 16, Lines 33-38 and Column 18, Lines 40-45)**, the data buses acting as communications links between the plurality of cards **(Column 10, Lines 42-45 and Column 11, Lines 5-10)**, that comprises:

monitoring the operational status for each one of the plurality of cards and each one of the communications links between the plurality of cards within the flexible cross-connect system; **(Column 12, Line 41 and Line 47; Column 13, Line 7and Line 12; Column**

15, Line 58; Column 17, Lines 45-48; Cantwell's system supports continuous performance monitoring in effect to determine the operational status of the cards and network elements. Performance monitoring sole purpose is to determine the operational status of a given network element by comparing the observed test results to predetermined threshold values)

determining when the operational status of any of the plurality of cards or the communications links between the plurality of cards indicates that the card or the communications link between the plurality of cards is non-operational; **(Column 12, Line 41 and Line 47; Column 13, Line 7and Line 12; Column 15, Line 58; Column 17, Lines 45-48;Performance monitoring of network elements involves data collection as well as determining the operational status of network elements.)**

autonomously switching from the non-operational active card to an associated redundant card when the operational status of the non-operational active card is determined or from the non-operational active communications link between the plurality of cards to an associated redundant communications link between the plurality of cards when the operational status of the non-operational active communications link between the plurality of cards is determined; **(Column 16, Lines 41-46;Column 17, Lines 45-48;. Cantwell's system allows autonomous switching at the network interface level and at the system communication link level if the non-operational active card's or active link's performance monitoring indicated the need to switch to the redundant card or link respectively.)**

determining when the non-operational active card or the non-operational active communications link between the plurality of cards requires maintenance; **(Column 2, Lines 42-49; Column 6, Line 28; Column 9, Lines 30-32; Cantwell's system not only determines that the specific card or link needs maintenance but also has the capability to keep a circuit or a connection in service while performing maintenance on the non-operational card or link.).**

Cantwell, however, does not expressly disclose reporting maintenance is required for non-operational cards or links.

Read discloses an identical system to that of Cantwell's where that reports maintenance is required for the non-operational active card or the non-operational active communications link between the plurality of cards when it is determined that the non-operational active card or the non-operational active communications link between the plurality of cards requires maintenance. **(Column 10, Lines 34-35, Lines 47-49, and Lines 57-60;)**

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the maintenance-reporting scheme of Read in Cantwell's invention when a card or a link fails. One would have been motivated to do this because having the failed component up and running again would ensure that the current connection has a backup connection for when it breaks down in the future guaranteeing continued path protection and end-to-end path integrity.

6. Regarding **claims 3 and 12**, Cantwell disclosed the aforementioned invention, including the method of preventing communications from being sent to the non-

operational active card or over the non-operational active communication link. **(Column 7, Lines 38-42; In telecommunication switching circuitry any card or link made out of service and unavailable is unable to communicate with other network elements and is a status used to indicate "an entity is unavailable" to conduct normal operations.)**

7. Regarding **claims 6 and 15,** Cantwell discloses a method for controlling the operation of a flexible cross-connect system, which has a plurality of cards **(Figure 1, elements 28 and 30; Column 6, Lines 5-10)** including an active control unit a redundant control unit, **(Figure 1, elements 12 A & B; Column 3, Lines 37-40)**, a plurality of interface cards **(Figure 1, elements 28 and 30; Column 6, Lines 5-10)**, an active cross-connect unit, a redundant cross-connect unit **(Figure 1, elements 24 and 26;Column 4, Lines 1-10)**, and a backplane forming a plurality of data buses **(Column 16, Lines 33-38 and Column 18, Lines 40-45),** the data buses acting as communications links between the plurality of cards **(Column 10, Lines 42-45 and Column 11, Lines 5-10)**.

Cantwell's disclosed method comprises:

monitoring the operational status for each one of the plurality of cards and each one of the communications links between the plurality of cards within the flexible cross-connect system; **(Column 12, Line 41 and Line 47; Column 13, Line 7and Line 12; Column 15, Line 58; Column 17, Lines 45-48; Cantwell's system supports continuous performance monitoring in effect to determine the operational status of the cards and network elements. Performance monitoring sole purpose is to**

determine the operational status of a given network element by comparing the observed test results to predetermined threshold values).

determining when the operational status of any of the plurality of cards or the communications links indicates that the card or the communications link between the plurality of cards is non-operational; **(Column 12, Line 41 and Line 47; Column 13, Line 7and Line 12; Column 15, Line 58; Column 17, Lines 45-48;Performance monitoring of network elements involves data collection as well as determining the operational status of network elements.)**

autonomously switching from the non-operational active card to an associated redundant card when the operational status of the non-operational active card is determined or from the non-operational active communications link between the plurality of cards to an associated redundant communications link between the plurality of cards when the operational status of the non-operational active communications link between the plurality of cards is determined;**(Column 16, Lines 41-46;Column 17, Lines 45-48;. Cantwell's system allows autonomous switching at the network interface level and at the system communication link level if the non-operational active card's or active link's performance monitoring indicated the need to switch to the redundant card or link respectively.).**

Cantwell, however, does not expressly disclose a method that includes detecting and reporting when any card or communications link between the plurality of cards has a change in operational status.

Read discloses a method of detecting and reporting when any card or communications link between the plurality of cards has a change in operational status. **(Column 10, Lines 34-35, Lines 47-49, and Lines 57-60; Definitely a system like Read's that involves monitoring errors on a card and link is a system that distinguishes normal operation of a card or a link from that of an intermittent failure conditions to that of a fault conditions that forces the system to initiate fault isolation and recovery procedure.)**

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the maintenance-reporting scheme of Read in Cantwell's invention when a card or a link fails. One would have been motivated to do this because having the failed component up and running again would ensure that the current connection has a backup connection for when it breaks down in the future guaranteeing continued path protection and end-to-end path integrity.

8. Regarding **claims 7 and 16**, Cantwell teaches all aspects of the claimed invention as set forth in the rejection of claim 6 but fails to teach how to detect and report status changes of the cards and links.

Read discloses a system like Cantwell but that has a method for detecting and reporting includes:

tracking how long the change in operational status persists; determining when the change in operational status has persisted for at least a pre-determined amount of time; and reporting the change in operational status when the pre-determined amount of time is exceeded. **(Column 10, Lines 34-35, Lines 47-49, and Lines 57-60; Definitely**

a system like Read's that involves monitoring errors on a card and link is a system that distinguishes normal operation of a card or a link from that of an intermittent failure conditions to that of a fault conditions that forces the system to initiate fault isolation and recovery procedure. Any system that has a performance monitoring system has to have a timer and has to measure the occurrence of errors. If the measurement of errors with a specific period exceeds a predetermined threshold then as Read points the card or link will be given a status that reflects intermittent failure condition and obviously if the problem persists with time it will be given a new status reflecting complete failure condition and recovery actions and fault isolation occurs.)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the maintenance-reporting scheme of Read in Cantwell's invention when a card or a link fails. One would have been motivated to do this because having the failed component up and running again would ensure that the current connection has a backup connection for when it breaks down in the future guaranteeing continued path protection and end-to-end path integrity.

9. Regarding **claims 8 and 17,** Cantwell teaches all aspects of the claimed invention as set forth in the rejection of claim 6 and 7 but fails to teach how to detect and report status changes of the cards and links.

Read discloses a method of detecting and reporting includes discarding the change in operational status when the change in operational status does not persist for the predetermined amount of time. **(Column 10, Lines 34-35, Lines 47-49, and Lines**

57-60; If the system never meets that time period, then it doesn't send out the change of operational status. Inherently then, the change of operational status is discarded.)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the maintenance-reporting scheme of Read in Cantwell's invention when a card or a link fails. One would have been motivated to do this because having the failed component up and running again would ensure that the current connection has a backup connection for when it breaks down in the future guaranteeing continued path protection and end-to-end path integrity.

10. **Claims 4 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al (US 6,370,155), hereinafter Cantwell, in view of Read et al (US 5, 781, 527), hereinafter referred to as Read, as applied to claims 1 and 3, above, and further in view of Quoc et al, (US 6, 092, 214), hereinafter referred to as Quoc.

The modified invention of Cantwell and Read as taught above disclosed the aforementioned invention but does not disclose that a card is flagged with a non-operational status if the card is receiving a software upgrade.

Quoc discloses that a card is flagged with a non-operational status if the card is receiving a software upgrade. **(Column 9, Lines 57-65; Quoc discloses that one of the purposes of having a redundant system is to provide seamless transition between network management modules in the event of system upgrades. It is implicit in this discussion that there is some sort of notice or flag that goes up when a part is being upgraded.)**

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have the redundant parts of Cantwell's and Read's combined modified invention the same way as described in Quoc's system during software upgrade. One would have been motivated to do this because the cards being updated will in effect become non-operational during this process, so the system will want to seamlessly reroute the communication messages using the redundant parts so that the system does not have to shut down during an upgrade.

11. **Claims 5 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al (US 6,370,155), hereinafter Cantwell, in view of Read et al (US 5, 781, 527), hereinafter referred to as Read, as applied to claim 1, above, and further in view of Harris (US 5, 771, 214).

The modified invention of Cantwell and Read as taught above disclosed the aforementioned invention but does not expressly disclose storing all of the past faults and the maintenance record of each card in a database.

Harris discloses a method of recording data related to each card in a database; and updating the database to reflect changes to any of the wherein the cards, wherein the changes include maintenance performed on, replacement of, or user configuration changes. **(Column 4, Lines 11-21; Harris discloses adding new alarms to a database that includes data of past alarms).**

It would have been obvious to a person of ordinary skill in the art to keep a record of past problems as disclosed by Harris in the modified system disclosed by Cantwell and Read. One would have been motivated to do this because keeping a

record of past faults and changes can indicate the overall reliability of a particular system and can indicate when a replacement part or system may be needed.

12. **Claims 9 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al (US 6,370,155), hereinafter Cantwell, in view of Read et al (US 5, 781, 527), hereinafter referred to as Read, as applied to claim 1, above, and further in view of Badt, JR., (US Pub. No. 2003/0133417), hereinafter referred to as JR.

The modified invention of Cantwell and Read as taught above disclosed the aforementioned invention but does not expressly disclose the existence of a connection map.

JR. discloses that the flexible cross-connect system is a first node within a network **(Paragraph 172),** and further maintains a connection map for the network. **(Paragraph 174)**.

It would have been obvious to a person of ordinary skill in the art to use the teachings of JR. involving a method keeping a database that tracks the network spare capacity and connection map in the cross-connect units disclosed in both Cantwell's and Read's systems. One would have been motivated to do this because this data can be stored in a database at the OSS or at the first node, so that it may be provided to the origin node as soon as failure is detected.

13. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al (US 6,370,155), hereinafter Cantwell, in view of Read et al (US 5, 781, 527), hereinafter referred to as Read, and Badt, JR., (US Pub. No. 2003/0133417), hereinafter referred to as JR.

Cantwell discloses a method for controlling the operation of a flexible cross-connect system which has a plurality of cards **(Figure 1, elements 28 and 30; Column 6, Lines 5-10)** including an active control unit, a redundant control unit **(Figure 1, elements 12 A & B; Column 3, Lines 37-40)**, a plurality of interface cards **(Figure 1, elements 28 and 30; Column 6, Lines 5-10)**, an active cross-connect unit, a redundant cross-connect unit **(Figure 1, elements 24 and 26; Column 4, Lines 1-10)**, and a backplane forming a plurality of data buses **(Column 16, Lines 33-38 and Column 18, Lines 40-45)**, the data buses acting as communications links between the plurality of cards **(Column 10, Lines 42-45 and Column 11, Lines 5-10)**, that comprises:

monitoring the operational status for each one of the plurality of cards and each one of the communications links between the plurality of cards within the flexible cross-connect system; **(Column 12, Line 41 and Line 47; Column 13, Line 7and Line 12; Column 15, Line 58; Column 17, Lines 45-48; Cantwell's system supports continuous performance monitoring in effect to determine the operational status of the cards and network elements. Performance monitoring sole purpose is to determine the operational status of a given network element by comparing the observed test results to predetermined threshold values)**

determining when the operational status of any of the plurality of cards or the communications links between the plurality of cards indicates that the card or the communications link between the plurality of cards is non-operational; **(Column 12, Line 41 and Line 47; Column 13, Line 7and Line 12; Column 15, Line 58; Column**

17, Lines 45-48;Performance monitoring of network elements involves data collection as well as determining the operational status of network elements.) autonomously switching from the non-operational active card to an associated redundant card when the operational status of the non-operational active card is determined or from the non-operational active communications link between the plurality of cards to an associated redundant communications link between the plurality of cards when the operational status of the non-operational active communications link between the plurality of cards is determined; **(Column 16, Lines 41-46;Column 17, Lines 45-48;. Cantwell's system allows autonomous switching at the network interface level and at the system communication link level if the non-operational active card's or active link's performance monitoring indicated the need to switch to the redundant card or link respectively.)**

determining when the non-operational active card or the non-operational active communications link between the plurality of cards requires maintenance; **(Column 2, Lines 42-49; Column 6, Line 28; Column 9, Lines 30-32; Cantwell's system not only determines that the a specific card or link needs maintenance but also has the capability to keep a circuit or a connection in service while performing maintenance on the non-operational card or link.).**

Cantwell, however, does not expressly disclose reporting maintenance is required for non-operational cards or links. Cantwell also fails to disclose the existence of a connection map associated with the network the flexible cross-connect system is part of.

Read discloses an identical system to that of Cantwell's where that reports maintenance is required for the non-operational active card or the non-operational active communications link between the plurality of cards when it is determined that the non-operational active card or the non-operational active communications link between the plurality of cards requires maintenance. **(Column 10, Lines 34-35, Lines 47-49, and Lines 57-60;)**

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the maintenance-reporting scheme of Read in Cantwell's invention when a card or a link fails. One would have been motivated to do this because having the failed component up and running again would ensure that the current connection has a backup connection for when it breaks down in the future guaranteeing continued path protection and end-to-end path integrity.

JR. discloses a system that maintains a connection map associated with the flexible cross-connect system **(Paragraph 174)**, the flexible cross-connect system being a node in a network **(Paragraph 172)**, the connection map being arranged to indicate statuses of nodes with the network,, wherein when it is determined that the operational status of any one of the plurality of cards or any one of the communications links between the plurality of cards indicates that the card is non-operational or the communications link between the plurality of cards is non-operational, the connection map is updated to indicate a change in status of the flexible cross-connect system. **(Paragraphs 8, 179 and 185; JR.'s discloses a system with the capability to generate a connection map that shows the active nodes along with cards and**

links and when ever a link or path or card fails the map in the database is updated to reflect the correct status including change in spare capacity.)

It would have been obvious to a person of ordinary skill in the art to use the teachings of JR. involving a method keeping a database that tracks the network spare capacity and connection map in the cross-connect units disclosed in both Cantwell's and Read's systems. One would have been motivated to do this because this data can be stored in a database at the OSS or at the first node, so that it may be provided to the origin node as soon as failure is detected.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patent is cited to show the state of the art with respect to Automatic Protection Switching and Equipment Protection Switching

US Patent (5, 740, 157) to Demiray et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HM
02-11-2005

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